

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims:**

1. (Currently Amended) An apparatus for validating the presence of an authorized consumable unit of a printing device, the consumable unit having a first authentication integrated circuit that is configured to store a secret key  $K_A$  and ~~state~~ data on a printing consumable of the consumable unit, the apparatus comprising:

a second integrated circuit which stores a public key  $K_T$  and is configured to hold a random number function which returns random number  $R$ , the second integrated circuit being configured to apply a function  $F[R]$  to return  $F_{KT}[R]$ , based on the public key  $K_T$ , and the first integrated circuit being configured to apply a function  $D[F_{KT}[R]]$  to return  $D_{KA}[F_{KT}[R]]$ , based on the secret key  $K_A$ ; and

a control system which is configured to request  $F_{KT}[R]$  from the second integrated circuit, to request  $D_{KA}[F_{KT}[R]]$  from the first integrated circuit to obtain  $R_A$ , and to compare  $R$  returned by the second integrated circuit with  $R_A$  returned by the first integrated circuit.

2. (Cancelled)

3. (Previously Presented) An apparatus as claimed in claim 1, in which the second integrated circuit is configured to advance  $R$  to next in sequence with each invocation of the random number function.

4. (Previously Presented) An apparatus as claimed in claim 3, in which the second integrated circuit includes a linear feedback shift register which holds the random number function.

5. (Cancelled)

6. (Currently Amended) A method of validating the presence of an authorized consumable unit of a printing device, the method comprising the steps of:

storing a public key,  $K_T$ , in an integrated circuit of the printing device and storing a secret key,  $K_A$ , in an integrated circuit of the consumable unit which also stores ~~state~~ data on a printing consumable of the consumable unit;

generating a random number  $R$  with the integrated circuit of the printing device;  
applying a function  $F[R]$  to  $R$  using  $K_T$  at the integrated circuit of the printing device to return  $F_K[R]$  and applying a function  $D[F_K[R]]$  to  $F_K[R]$  using  $K_A$  at the integrated circuit of the consumable unit to return  $R_A$ ; and  
comparing  $R$  from the integrated circuit of the device with  $R_A$  from the integrated circuit of the consumable unit.